

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
18 August 2005 (18.08.2005)

PCT

(10) International Publication Number
WO 2005/074365 A3

(51) International Patent Classification⁷: **A61B 8/14**

(21) International Application Number:
PCT/IL2005/000128

(22) International Filing Date: 3 February 2005 (03.02.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/541,923 6 February 2004 (06.02.2004) US

(71) Applicant (for all designated States except US): **TECHNION RESEARCH AND DEVELOPMENT FOUNDATION LTD.** [IL/IL]; Technion City, 32000 Haifa (IL).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **ADAM, Dan** [IL/IL];
32 Finland Street, 34989 Haifa (IL).

(74) Agents: **LUZZATTO, Kfir** et al.; P.O. Box 5352, 84152
Beer Sheva (IL).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,

CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ,
TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA,
ZM, ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,
SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,
GQ, GW, ML, MR, NE, SN, TD, TG).

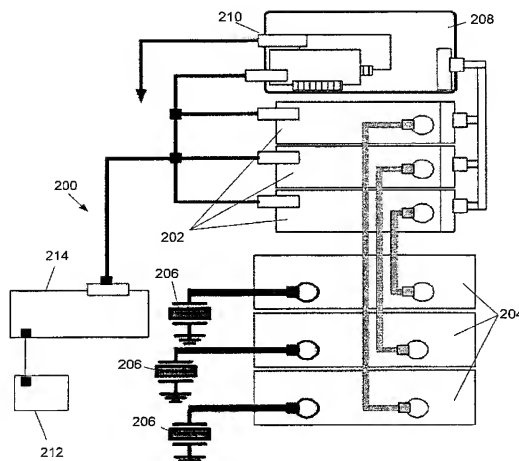
Published:

- with international search report
- before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments

(88) Date of publication of the international search report:
24 November 2005

[Continued on next page]

(54) Title: LOCALIZED PRODUCTION OF MICROBUBBLES AND CONTROL OF CAVITATIONAL AND HEATING EFFECTS BY USE OF ENHANCED ULTRASOUND



(57) Abstract: The invention is a method of using ultrasound waves that are focused at a specific location in a medium to cause localized production of bubbles at that location and to control the production, and the cavitation and heating effects that take place there. According to the method of the invention, the production and control is accomplished by selecting the range of parameters of multiple transducers that are focused at the location such that they produce by interference specific waveforms at the focal point, which are not produced at other locations. Preferably the region within the focal zone of all the transducers in which the specific waveform develops at significant intensities, is typically very small. The invention is also a system for carrying out the method. The method and system of the invention can be used to perform a variety of therapeutic procedures. Typical of such procedures is occlusion of varicose veins.



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.